

What is claimed is:

1. A method for processing information from a tool moving in a borehole within a geologic formation, comprising the steps of:

5 (a) sensing parameters of the tool motion using at least one accelerometer and at least one magnetometer attached to the tool;

(b) computing parameters of the tool motion in a borehole reference frame based on measurements from said at least one accelerometer and said at least one magnetic induction sensor by taking into account the orientation of said at least one accelerometer in relation to the gravitational field;

10 (c) monitoring the computed parameters and comparing the monitored parameter(s) to standard operating parameters; and

(d) generating a signal if one or more monitored parameters fall outside a predetermined range of operating values.

15 2. The method of claim 1, in step (a) using at least two accelerometers and at least two magnetometers.

3. The method of claim 2, wherein said at least two accelerometers measure the parameters  $a_{r1}$ ,  $a_{r2}$ ,  $a_{t1}$ ,  $a_{t2}$ ,

20 where  $a_{ri}$  is the radial acceleration component of the i-th accelerometer and  $a_{tj}$  is the tangential acceleration component of the j-th accelerometer.

4. The method of claim 1, wherein step (b) of computing parameters of the tool motion in a borehole reference frame is performed in real time.

5. The method of claim 1, wherein the computed motion parameters in step (b) are used to determine optimal activation times for NMR measurements.

25 6. The method of claim 1, wherein the computed motion parameters in step (b) are used to compensate NMR measurements for the motion of the tool.